The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CLIVE J. SHIFF and THADDEUS K. GRACZYK

Appeal No. 2005-1090
Application No. 09/006,999

ON BRIEF

Before THOMAS, BARRETT, and BLANKENSHIP, Administrative Patent Judges.

BLANKENSHIP, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1, 4, 6-8, and 10-12, which are all the claims remaining in the application.

We reverse, and enter a new ground of rejection in accordance with 37 CFR § 41.50(b).

BACKGROUND

The invention relates to a continuous centrifugation apparatus and method. A continuous flow centrifuge includes an insert of glass beads, sand, or the like in centrifuge tubes through which a continuous flow of water may be filtered. The apparatus is used to concentrate cysts of microorganisms such as giardia or cryptosporidium from large volumes of water, thus facilitating the detection of such contaminating organisms in groundwater and public drinking water.

Claims 1 and 11 are reproduced below.

1. In a continuous flow centrifuge apparatus, the improvement comprising the addition of a filtration column of particulate material.

11. A continuous flow centrifuge apparatus which is adapted to include a filtration column of particulate material having a size range of 120-50 μm.

The examiner relies on the following references:

Olsson	5,019,497	May 28, 1991
Borchardt et al. (Borchardt)	5,846,439	Dec. 8, 1998 (filed Feb. 28, 1996)
Leu	5,866,071	Feb. 2, 1999 (filed Mar. 6, 1996)

Anand R. Mudambi et al. (Mudambi), Mirex in Oswego River and Lake Ontario Water Columns, Proceed. 26th Conf. Great Lakes Res., p. 32 (May 1983).[1]

[1] The full citation for the Mudambi reference has been provided by the examiner, but does not appear on our single-page file copy.

T. N. Whitmore et al. (Whitmore), Comparison of Methods for Recovery of *Cryptosporidium* from Water, Wat. Sci. Tech., Vol 27, No. 3-4, pp. 69-76 (1993).

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Mudambi.

Claims 1, 4, 6-8, and 10-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whitmore and Olsson.

Claims 1, 4, 6-8, and 10-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Borchardt and Leu.

We refer to the Final Rejection (mailed Mar. 17, 2003) and the Examiner's Answer (mailed Mar. 22, 2004) for a statement of the examiner's position and to the Brief (filed Feb. 18, 2004) for appellants' position with respect to the claims which stand rejected.

OPINION

Mudambi

Mudambi describes analysis of water samples for dissolved and particulate mirex.[2] The reference reports samples being passed through a continuous flow

[2] Mirex is an insecticide known to have harmful effects on humans. The sale, distribution, and use of mirex is now prohibited in the United States. See Persistent Bioaccumulative and Toxic (PBT) Chemical Program: Mirex, U.S. Environmental Protection Agency, available at http://www.epa.gov/opptintr/pbt/mirex.htm (June 1, 2005).

centrifuge, to remove particles, "and then through an XAD-8 column to adsorb dissolved mirex."

In response to the rejection of claim 1 for anticipation, appellants argue that the process of adsorption is different from filtration. Further, appellants submit that the "filtration step" is separate from the "centrifugation step" in the device and process of Mudambi. Appellants argue that the device of the present invention combines the filtration column in the centrifuge. (Brief at 3-4.)

The examiner submits that passing a fluid through an adsorbent medium qualifies as a "filtration." The examiner further responds that the features relied upon "(i.e., separate filtration and centrifugation steps, or 'the concept of the present invention' as stated on page 4 of the appeal brief), are not set forth in the claims." (Answer at 9.)

With respect to the "steps" and "concept" of claim 1, we agree with the examiner to the extent that no "steps" are required. However, the claim is in Jepson format. The claim indicates an intent to claim a combination, whereby what is conventional or known is set forth in the portion preceding "the improvement comprising," with the conventional or known elements forming part of the combination. See, e.g., Rowe v. Dror, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997). The claim thus requires a continuous flow centrifuge apparatus, to which is added a filtration column of particulate material.

Mudambi discloses a continuous flow centrifuge for removing mirex particles and a column -- not described as forming any part of the centrifuge -- that is used to adsorb dissolved mirex, relating to apparent separate steps requiring separate pieces of equipment. Because Mudambi does not disclose a continuous flow centrifuge apparatus with an added filtration column of particulate material, we cannot sustain the rejection of Claim 1 under 35 U.S.C. § 102(b) as being anticipated by Mudambi.

Borchardt and Leu

Borchardt describes a method and apparatus for concentrating oocysts of waterborne protozoan parasites (e.g., cryptosporidium) from water. The reference teaches, as shown in Figure 1 and described at columns 3 through 5, a portion of a centrifuge that was manufactured for use as a blood separator. The centrifuge includes a separation channel assembly 10 with a rotating seal assembly 14, consisting of a stationary top half 16 and a bottom half 18 that rotates with separation channel 12. The centrifuge has a whole blood input line 20 and three output lines 22, 24, and 26, used respectively for plasma, white blood cells, and packed red cells.

To concentrate cryptosporidium from water, the blood cell separator is operated as a simple continuous flow centrifuge. Water potentially contaminated with dilute densities of oocysts is fed into separation channel 12 via whole blood input line 20. After centrifugation, cryptosporidium, other organisms, inorganic sediment, and detritus

are retained in separation channel 12 rather than being pumped out as usual for blood cells. Prior to centrifugation, separation channel 12 and associated tubing are primed with water containing a surfactant to enhance removal of the collected material containing the parasites. Recovery of the oocysts includes (col. 5, ll. 29-42) channel 12 being cut in half, shaken vigorously, and placed on a laboratory vortex to dislodge any cryptosporidium that may have adhered to the inner channel walls. The rinsing procedure is conducted several times, with the concentrate and all rinses being combined prior to examination for oocysts.

Leu relates to a centrifuge tube used for density gradients centrifugation for separation of biological materials and cells. The examiner contends that tubes containing dextran, used in distributing different media according to their densities (e.g., separation of pancreatic islets and cells; col. 4, ll. 35-53; Figs. 4A through 5C), teaches the use of a "particulate filtration column" in a centrifuge. The examiner concludes that it would have been obvious to use the "column" of Leu in the continuous flow centrifuge of Borchardt.

Appellants, in the Brief, appear not to contest the examiner's finding that Leu teaches a "filtration column of particulate material" in a centrifuge. Appellants argue, however, that a filtration column of particulate material cannot be added to a channel as taught by Borchardt. "[T]here does not appear to be any way that the centrifuge

tube of Leu can be combined with Borchardt . . . to yield the present invention." (Brief at 7.)

Even assuming that Leu describes material that an artisan may have considered a "filtration column" within the meaning of the claims, we agree with appellants that the references fail to establish a prima facie case for obviousness. Absent the benefit of appellants' teachings in the specification, we do not see how the objective teachings of Borchardt and Leu might have suggested a combination that meets the terms of the instant claims. We are mindful that is not necessary that the inventions of the references be physically combinable to render obvious the invention under review. In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983). However, even with the benefit of the teachings afforded by the specification, it is not apparent how the apparatus of Borchardt and the apparatus of Leu might be combined to result in an operative device, or how the teachings of Leu might have suggested some improvement to the type of continuous flow centrifuge described by Borchardt.

The examiner can satisfy the burden of showing obviousness over a combination of references "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). Particular findings must be

made with respect to why the skilled artisan, with no knowledge of the claimed invention, would have selected components for combination in the manner claimed. In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). In the instant case there is no objective teaching of how the apparatus or method of Leu might have improved the apparatus or method of Borchardt.

We therefore cannot sustain the rejection of claims 1, 4, 6-8, and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Borchardt and Leu.

Whitmore and Olsson

We cannot sustain the rejection of claims 1, 4, 6-8, and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Whitmore and Olsson, for reasons similar to why we cannot sustain the rejection over Borchardt and Leu.

The rejection relies on column 7, lines 10 through 23 of Olsson for its teaching of separating free proteins from free iodine by centrifugation through a column "mounted in a centrifuge tube to catch the flow through containing labeled proteins." The reference does not appear to disclose, and the rejection does not allege that Olsson teaches, a continuous flow centrifuge. Whitmore, on the other hand, describes a continuous flow centrifuge having a bowl from which debris and the oocysts under study are removed (see Whitmore at 72 and 75).

We acknowledge that Whitmore teaches that the centrifuge apparatus needs improvement. However, in our opinion the objective teachings of Whitmore and Olsson are insufficient to have led the artisan to equip or adapt the type of continuous flow centrifuge of Whitmore with a filtration column of particulate material, as required by the claims, nor would the references have taught how it might be done. Even assuming there is some combination of the teachings of Whitmore and Olsson that would result in an apparatus or process within the scope of the instant claims, there is no objective teaching in support of making whatever combination the rejection might contemplate.

On this record we have showings of, at best, a particular type of continuous flow centrifuge and a recognition in the prior art that a filtration column element as claimed might constitute an improvement over the prior art continuous flow centrifuge for recovery of cysts of microorganisms from large volumes of water. How the applied prior art may have suggested combining a continuous flow centrifuge with a filtration column of particulate material is a matter for speculation, not a basis for a prima facie case for unpatentability.

The allocation of burdens requires that the USPTO produce the factual basis for its rejection of an application under 35 U.S.C. § § 102 and 103. In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (citing In re Warner, 379 F.2d 1011, 1016, 154 USPQ 173, 177 (CCPA 1967)). The one who bears the initial burden of presenting a prima facie case of unpatentability is the examiner. In re Oetiker, 977

F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). However, sufficient evidence in support of unpatentability must be discerned by the Board. See In re Zurko, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001) (in a determination of unpatentability "the Board must point to some concrete evidence in the record in support of...[the]...findings").

New ground of rejection

We enter the following new ground of rejection against the claims in accordance with 37 CFR § 41.50(b): Claim 11 is rejected under 35 U.S.C. § 102(a)[3] as being anticipated by Yousif.[4]

We remanded this application previously (decision mailed Sep. 27, 2002) whereby we, inter alia, directed that appellants provide a copy of Yousif, cited at page 4 of the instant specification, for the examiner's review. The paragraph bridging pages 3 and 4 of the specification appears to relate that Yousif describes use of appellants' disclosed invention. Upon review of the reference, however, it is apparent that the specification paragraph intermingles aspects of the instant invention and the prior art.

---

[3] Claim 11 is fully supported by appellants' provisional application 60/035,099, filed January 14, 1997.

[4] Fouad Yousif et al., Filtration, Centrifugation And Mouse Exposure For The Detection Of Schistosome Cercariae In Water, J. Egypt. Soc. Parasitol., Vol. 26, No. 1, pp. 249-60 (April 1996).

Yousif does disclose, however, a continuous flow centrifuge (Fig. 2) containing six 22 ml stainless steel tubes, with a cone having six openings fitted with six plastic tubes, each plastic tube inserted into a proximal (stainless steel centrifuge) tube mouth. During centrifugation, water passes from the cone into the steel tubes via the plastic tubes. Excess water overflows from the spinning tubes into the body of the centrifuge and out through a hole. Cercariae and debris collect at the bottom of the centrifuge tubes, which are later collected and examined for the organism of interest. Yousif at 251-52, ¶ 2.

We find that the only substantive difference between appellants' invention as depicted in instant Figure 1 and the apparatus described by Yousif is the addition of the filtration matrix to the centrifuge tubes. However, we note that the feature (not claimed) of the tubing extending to the bottom of the centrifuge tube (spec. at 8, ll. 7-10) could also be considered to differ, to some degree, from the teachings of Yousif. The tubing extending to the bottom of the tube might enhance filtration characteristics when the filtration matrix is in place, dependent upon the contents of the fluid flowing through the matrix.

Of the instant claimed inventions, claim 1, for example, requires the combination of a continuous flow centrifuge apparatus having a filtration column of particulate material. Instant claim 11 appears in one aspect to be narrower, in reciting a particulate material having a specified size range. Claim 11 could be interpreted as

requiring inclusion of the filtration column. However, the broadest reasonable interpretation of the claim, consistent with the specification, requires only that the continuous flow centrifuge apparatus be suitable for inclusion of a filtration column as specified. The claims measure the invention. SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1121, 227 USPQ 577, 585 (Fed. Cir. 1985) (en banc). During prosecution before the USPTO, claims are to be given their broadest reasonable interpretation, and the scope of a claim cannot be narrowed by reading disclosed limitations into the claim. See In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550 (CCPA 1969).

Claim 11 could have been drafted in a form that excluded the broader interpretation; e.g., containing unequivocal language that the apparatus "includes" a filtration column as specified in the claim, rather than being "adapted to" include the column. Present claim 11 would cover a centrifuge, as disclosed, absent any particulate material. However, a centrifuge outfitted and dimensioned such that it may receive the filtration column recited in claim 11 is in the prior art, as described by Yousif. That Yousif does not expressly describe the structure as suitable for inclusion of a filtration column is essentially irrelevant with respect to novelty. See In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) ("It is well settled that the recitation of a new intended use for an old product does not make a

claim to that old product patentable"); In re Hack, 245 F.2d 246, 248, 114 USPQ 161, 162 (CCPA 1957) ("[T]he grant of a patent on a composition or machine cannot be predicated on a new use of that machine or composition").

CONCLUSION

The rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by Mudambi is reversed. The rejection of claims 1, 4, 6-8, and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Whitmore and Olsson is reversed. The rejection of claims 1, 4, 6-8, and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Borchardt and Leu is reversed.

A new rejection of claim 11 under 35 U.S.C. § 102(a) is set forth herein.

This decision contains a new ground of rejection pursuant to 37 CFR § 41.50(b) (effective September 13, 2004, 69 Fed. Reg. 49960 (August 12, 2004), 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)). 37 CFR § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 CFR § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options

with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .
>
> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv).

REVERSED -- 37 CFR § 41.50(b)

JAMES D. THOMAS
Administrative Patent Judge)
)
)
)
)
LEE E. BARRETT) BOARD OF PATENT
Administrative Patent Judge) APPEALS
) AND
) INTERFERENCES
)
)
)
HOWARD B. BLANKENSHIP)
Administrative Patent Judge)

VENABLE LLP
P.O. BOX 34385
WASHINGTON, DC 20045-9998